Notes from the 1997 Annual Meeting of the **FORUM** for International Cooperation on Fire Research

by
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The tenth annual meeting of FORUM was held in Tianjin, China October 5-11, 1997. The meeting was hosted by the Tianjin Fire Research Institute.

The FORUM Symposium was held 6-7 October in Tianjin with approximately 30 attendees from key government and private organizations across China. The papers provided an interesting mix of topics from highly technical (Correlation of Ignition Time for Liquid Fuels and Heat Radiation) to general. Two papers of particular interest to the foreign attendees were Fire Research in China which explains the responsibilities of numerous agencies doing research and testing, and China's System for Fire Codes and Standards which itself describes the system as "very complicated." Both provide valuable insight into how things are done in China. There was considerable interest in and discussions with the Chinese attendees on many topics including progress in several countries on the development of performance-based codes. The FORUM business meeting was held over 8-10 October with 10 members in attendance along with several guests and local observers. Reports on membership and business/financial arrangements were made.

A discussion of the status of two of the three project ideas suggested at the 1996 meeting (the third project was championed by Kjell Pederson who was not in attendance) is summarized as follows:

The project to reach some consensus on model documentation and validation issues is proceeding. Geoff Cox (FRS, UK) circulated a position statement on documentation issues but few comments were received. CIB W14 agreed to sponsor a workshop between modeler and experimentalists at Garston (UK) in the fall of 1998 to work these issues. NIST (US) offered to explore an updating of the Friedman survey of available models. Once this is in place, it was suggested that models related to buildings but for other functions than fire safety be similarly identified. CIB (e.g., W60) would be interested in working this with FORUM.

The second project was championed by Richardson (Canada) on an improved collection of international fire incidence data needed to conduct fire risk analysis. NRCC agreed to take the lead in developing a list of specific data needs and conduct a test collection of data with this list. This would most likely be conducted with a student over the summer of 1998. FORUM members and others are encouraged to provide data to this effort.

A regular feature of FORUM meetings is the member presentations of highlights of their current research programs and discussion of important issues within their organizations. These presentations are summarized below:

National Research Council of Canada
The National Research Council has been reorganized into a series of programs aligned to their lines of business. The Fire lab is now called Fire Risk Management. Each director is additionally responsible for a share of administrative services. Institute management is done as a team by the 5 directors and the Director General.

Fire Risk Management Objectives:
1. Provide the National Building Code with evaluation methodologies.
2. Provide industry with cost effective, environmentally friendly technologies.
3. Provide methodologies and technologies to reduce total fire costs,
4. Become a catalyst for the Canadian Fire Data Center.

Resources:
40 person years
$4M BUDGET
Cooperation with Canadian Codes Center
Partner support $1.5-2M.
It has been found that if Research Partnerships exceed 1/3 of TOTAL resources there is not enough left for strategic research and research enhancement.

Program Areas:
1. Active Fire Protection
2. Fire Resistant Construction
3. Fire Safety Performance of Office and Residential Buildings
4. Fire Safety Performance of Light Industrial Buildings

Beta testing for FiRECAM -- 3 agreements for the Residential Office version so far; (VTT Tiawan & Victoria University of Technology) anyone else welcome.

Fire Research Station (UK)
Formerly a UK government agency, FRS was privatized on 19MAR97, and is now owned by the Foundation for the Built Environment. The company is “limited by guarantee” (not for profit), and is managed by 150 members (similar to Underwriters Laboratories Members) representing all sectors of construction. The Foundation owns BRE Ltd.

Membership "Colleges" include people from the following categories: Professionals, Housing, Contractors, Material/Product suppliers, Building owners & managers, Universities.

The management “Council is made up of a chairman, 7 members from the Colleges, 4 members from the BRE board, 1 BRE staff, and 3-4 yet to be added.

The Foundation Roles are:
- Ownership & promotion
- Strategic guidance
- Market-based advice
- Defense of independence
- Professional audit

FRS will stay the same through:
- Commitment to development & application of fire science
- Commitment to quality
- Breadth of experience
- Facilities with sustained investment
- Independent of industry
- Not driven by owner priorities
- Primary source of research advice to government

FRS will change by:
- Expansion of synergistic work with other parts of BRE
- Expanded consultancy
- Extended non-construction capabilities
- Increased testing
- Increased presence of EU and SE Asia

Resources:
- 50 staff (45 technical)
- 80% funding gov. (US$3.8M direct, US$5.0M total)
- 40% new knowledge, 60% application

The greatest issues relate to the economic impact of fire in the UK.
Important selected projects include integration of fire models, the Single Burning Item Test (European Union issue), and transport (i.e., the channel tunnel fire)

Tianjin Fire Research Institute (China)
Budget & Finance:
TFRI has a staff of 280 and separate budgets for salaries and for projects. Current budget is 9M¥ total.
Mr. Jing is Director General, Mr. Han is deputy.
Mr. Ma, Mr. Zheng, and Ms. Du are division chiefs.
Recently, the National Fire Research & Engineering Center was formed
There is also a new inspection & test department called the National Center for Quality Testing

State Key Laboratory for Fire Science (China)
They have 30 staff and 20 students divided into 6 research groups. The structure has not changed from last year.

FAN is still director but has new duties promoting the University.
Principal Researchprojects include building fire research; forest fire; electronics; chemical fire hazards; and numerical simulation.
The Support Section (e.g., instrumentation) works on development of new techniques.

The mission is fundamental research in fire; evacuation; education; detection; underground buildings.
Funding:
31M¥ (half government, half industry) covers both salaries and research.
Selected Projects:
Underground & large space buildings
Fire & smoke behavior in large scale building (material combustion features, fire behavior, smoke, numerical simulation)
Demonstration project -- underground structure, large building (auditorium or sport field)
Collaborations:
other institutes at the University
Hong Kong Polytechnic
industry (tobacco, chemical)

Southwest Research Institute (US)
SwRI was started 50 years ago to provide R&D services to small firms on an as needed basis. Their mission is to provide R&D Engineering and consulting services in applied engineering and physical sciences to industry, commercial, and government organizations on a contractual basis using multi disciplinary approaches to problem solving. They have 2600 employees total, funding 50% government, 50% industry
In the Fire Technology Division, the funding ratio is 20% government and 80% industry. The Fire Technology Division budget is about $3.7M in direct funding of projects with $0.2M in Institute funds. Research priorities are to determine basic properties; materials and structural response; develop experimental and analytical tools, understand scaling effects.
Testing priorities are to qualify products and develop data bases of product and material information.
Engineering goals in Quality Assurance and Certification are to measure or predict the response of materials or products and to improve the performance of products.

Selected Projects include:
Construction -- Advanced composites, Heat Release Rate measurements, 25 & 50 foot flame spread measurements in unique large-scale apparatus.
Transportation -- plastic fuel storage tanks, alternative fuels, permeability
Telecommunications -- response of components
Petrochemical -- hazard and risk of pool, jet, vapor cloud and dust combustion, above ground fuel tanks.
Collaborations are encouraged on a case by case basis.

Major Issues:
Development of analytical tools
Performance-based Codes
Multi disciplinary approach
Scaling correlations

ICITE (Italy)
Part of the National Research Council of Italy
Activities and organization has not changed from last year.
They have 79 staff; 34 researchers, 15 technicians, 23 technical operatives, 7 administrative
Fire Safety Division:
Fire losses in Italy are low. There is a focus on historical buildings and preservation of national heritage
Major projects

- Fire Safety Engineering design of historical buildings
- modeling
- flame retardants
- fire safety education (with universities)

Funding $!.5M from government (exclusive of any special projects), $1M private funds from certifications, etc.

Building Research Institute, Ministry of Construction (Japan)
Goals:
Protecting cities and buildings from disasters.
Improvement of living conditions.
Rational regulation of the built environment and the development of new construction techniques.
Effective use of energy and natural resources.
Promotion of international harmonization and cooperation.
They have 12 staff and several new facilities including a wind tunnel for Urban fire (5x4m)
Annual Budget ¥500M ($4M).
Major Issues:
First stage performance-based Building Regulation due in April 1998.
New fire tests for performance-based regulation and international harmonization.

National Research Institute for Fire and Disaster, Fire Defense Agency (Japan)
Japan has about 1000 fire brigades under the general supervision of the Fire Defense Agency.
NRIFD provides technical and research assistance to the fire brigades.
Major Research Areas:
Residential building fires & safety
Earthquake Disaster mitigation
Petrochemical facility fire & safety
Development of fire analysis tools

Highlights:
The recent government privatization initiative has resulted in 22 ministries reducing to 12.
NRIFD has seen an increase in research topics (25 to 40), more collaborations with industry, and an increase in visiting researchers from fire brigades and industry.

Recent nuclear facility fire incidents have spawned special projects including safety of low level radioactive material packed in asphalt and fire in metallic sodium.

1997 Research Program:

Fire in Structures
Fire Fighting and Equipment
Hazardous Materials
Extinguishing & Fire protection equipment
Earthquakes
Misc.
(detailed project descriptions on their www site)

Major Issues:
Development of fire extinguishing by air attack following Earthquake
Propose cooperative work with FORUM on:
1 Prediction of smoke movement in underground facilities
2. Combustion products in early stage of residential fires

NIST (US)
Mission, organization, finances, and products are summarized in the "Accomplishments" booklet for 1996-97.
Fire budget is about $10M, $6M appropriated, including $1.5M grants.
There has been a management driven change in focus from projects and reports to products and outcomes.
Fire Program FY97 Major Products include:
Quantitative Evaluation of Fire Safety Features ($878k)
Fire Safe Materials ($690k)
New/Improved Fire Diagnostics ($707k)

FY98 BFRL Major Products:
High Performance Concrete
Performance Standards for housing
Fire Safe Polymers
Cybernetic Building Systems
Fire Safety Performance Evaluation System
Computer Integrated Construction Environment

Others:
Advanced firefighting technology
FRIS
Advanced fire measurements
heat flux measurements
green suppressants
integrated assessment of fire

Accomplishments:
Collaboration with Dow Corning
Collaboration with 3M
Stratosphere tower (Las Vegas) performance-based design
nanocomposites
water vs. class A foams for structural fire fighting

measurement of lean flammability limits of refrigerants
LAVENT adopted in NFPA204
microgravity combustion experiments on the Shuttle

Issues:

- Shifting emphasis for Lab products from project reports to products in use by collaborators/partners
- Enhancing priorities of BFRL within NIST.
- Management effectiveness
- Fire program impact and visibility

Architectural and Building Research Institute (Chinese Tiapei)
Staff is currently 42 (77 are authorized), 13 in fire
1997 Budget $6M (all government, $.5M for fire)
The 5 year plan is for the budget to rise to $12.5M (total) for fire research.
Objectives:

Fire Prevention
Fire Control
Smoke Control & Evacuation
Fire Practice

Accomplishments (88-97)
Tests of materials and elements
design of fire safety building
fire performance of materials and elements
planning
codes & standards
regulation and strategy
KTV room tests (see paper from symposium)

Planned Projects:

Smoke & Evacuation
Regulation & Strategy

Mid term Plan (98-03)

Standard & methodology for Fire Safety Design
Fire Modeling
Performance Code
Smoke Control & Evacuation
Regulations & Strategy
set up of National Fire Safety Laboratory

Future Meetings
The 1998 FORUM meeting and symposium will be held at NIST (US) the week of 5-9 October 1998 (symposium on 5-6 October). The 1999 meeting is tentatively set for Italy. Giovanni Gallina will report on suggested dates and specific locations at the 1998 meeting.